

## Low SWaP-C FAA Compliant UAV Navigation, Phase I

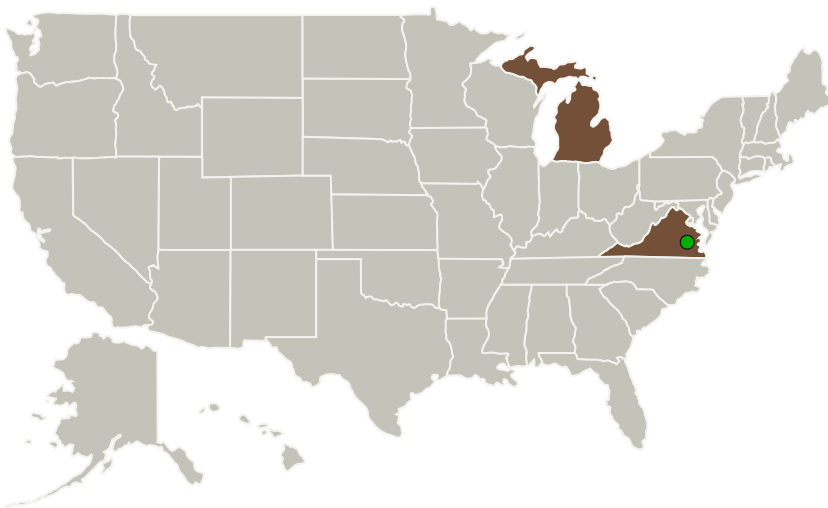
Completed Technology Project (2016 - 2016)



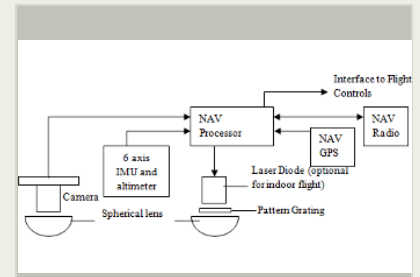
## Project Introduction

NASA is responsible for breakthrough research to assure that adding UAS to the US Airspace is safe to both manned and unmanned aircraft. The FAA has made new rules that restrict small consumer and commercial UAS from operating beyond line of sight and over 500 feet in altitude but present day UAS controllers do not enforce these rules in hardware, and manual pilots cannot assure compliance with present day small UAS controls. Furthermore, while many UAS have GPS awareness, they have virtually no awareness of potential collision events. We propose to develop and demonstrate a collision safe and FAA rules enforcing UAS controller technology and make it available widely for consumer UAS licensing for low cost. Small outdoor UAVs for surveillance, small payload transport, and other applications are readily available in the commercial market and are remaking the lower altitude airspace. These units navigate through direct teleoperation within line of sight of the operator and controller. Some units also include GPS navigation so that they can accurately station-keep or move to a predetermined location and altitude. The missing technology for this kind of autonomous operation is obstacle detection and avoidance integrated with controls in a low SWaP-C form factor.

## Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
● Langley Research Center(LaRC)	Supporting Organization	NASA Center	Hampton, Virginia



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## Organizational Responsibility

## Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

## Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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## Primary U.S. Work Locations

Michigan

Virginia

## Project Transitions

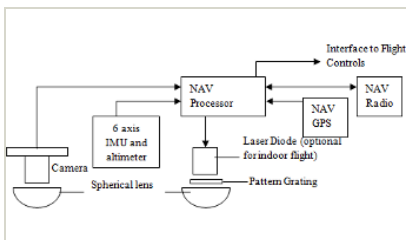
**June 2016:** Project Start

**December 2016:** Closed out

### Closeout Documentation:

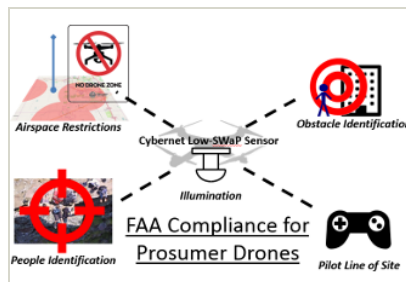
- Final Summary Chart(<https://techport.nasa.gov/file/139962>)

## Images



### Briefing Chart Image

Low SWaP-C FAA Compliant UAV Navigation, Phase I  
(<https://techport.nasa.gov/image/131934>)



### Final Summary Chart Image

Low SWaP-C FAA Compliant UAV Navigation, Phase I Project Image  
(<https://techport.nasa.gov/image/126084>)

## Project Management

### Program Director:

Jason L Kessler

### Program Manager:

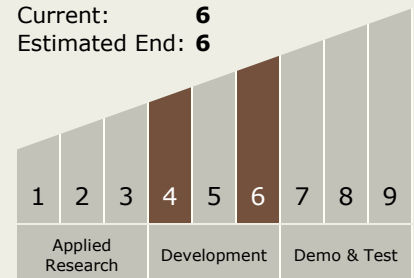
Carlos Torrez

### Principal Investigator:

Charles Jacobus

## Technology Maturity (TRL)

Start: **4**  
Current: **6**  
Estimated End: **6**



## Technology Areas

### Primary:

- TX01 Propulsion Systems
  - TX01.3 Aero Propulsion
    - TX01.3.1 Integrated Systems and Ancillary Technologies

## Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System